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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,082	03/31/2004	Alexander L. Gaeta	SP03-046	7341
22928	7590	01/25/2006	EXAMINER	
CORNING INCORPORATED			DUPUIS, DEREK L	
SP-TI-3-1			ART UNIT	PAPER NUMBER
CORNING, NY 14831			2883	

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/815,082	<b>Applicant(s)</b> GAETA ET AL.	
	<b>Examiner</b> Derek L. Dupuis	<b>Art Unit</b> 2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2005.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments, see pages 9 and 10, filed 11/15/2005, with respect to the rejection(s) of claim(s) 1-9, 11-15, and 17-27 under 35 U.S.C. 102(b) and claims 10 and 16 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejections has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found and applied prior art.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 24 recites the limitation "the soliton" in line 2. There is insufficient antecedent basis for this limitation in the claim. For the purpose of examination, the examiner has interpreted this limitation to be "the optical energy".

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 1, 4, 6-8, 13, 15, 17, 18, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Kawanishi et al (US 6,404,966 B1)*.

7. Kawanishi et al teach an optical fiber for the transmission of optical energy comprising a cladding region (2) including a photonic band gap structure, the optical energy having a wavelength within the photonic band gap structure. The fiber also includes a core region (1) surrounded by the photonic band gap structure. The photonic band gap structure guides the optical energy substantially within the core region with a loss of about 0.01 dB/km which is less than the claimed ranges of less than 300 dB/km, less than 200 dB/km, less than 50 dB/km, and less than 20 dB/km (see column 3, lines 25-43).

8. Kawanishi et al also teach that the optical fiber includes a hollow core filled with air, which is a gaseous material (see column 3, lines 25-35). The fiber is manufactured using a stack and draw method (see column 6, lines 34-42). Figure 3 also shows that the core has a diameter that is less than 4 times the pitch of the band gap structure.

9. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP 2144.05.

10. Regarding the limitation appearing in claims 13, 25, and 26, it has been held that the recitation that an element is "capable of" performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. In re Hutchison, 69 USPQ 138.

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11. Claims 1-3, 5, 6-10, 13, 14, 16-18, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Libori et al (US 6,792,188 B2)*.

12. Libori et al teach an optical fiber for the transmission of optical energy comprising a cladding region including a photonic band gap structure, the optical energy having a wavelength within the photonic band gap of the photonic band gap structure and a core region surrounded by the photonic band gap structure as shown in figure 2. The photonic band gap fiber has low material losses (see column 10, lines 38-55). Libori et al also teach that the core region can have a lower refractive index than the average refractive index of the photonic band gap structure (see figure 16). Libori et al also teach that the optical energy can have a wavelength between 1000 nm and 2400 nm (see figure 5) which overlaps with the claimed ranges of between 150 nm and 11,000 nm, greater than 1000 nm, between 1400 nm and 1500 nm, and between 1680 nm and 1900 nm. Libori et al also teach that the dispersion is greater than 20 ps/nm/km as seen in figure 5 and that the fiber is capable of carrying multiple modes. As shown in figures 1 and 2, the core has a diameter that is less than 4 times the pitch of the PGB structure.

13. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP 2144.05.

14. Libori et al discloses the claimed invention except for explicitly teaching that the loss is less than 20 dB/km. Libori et al disclose that a low loss is desirable (see column 10, lines 38-55) and can be achieved using a PGB structure in the cladding. It would have been obvious to one of ordinary skill in the art at the time of invention to have a loss less than 20 dB/km since it has

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been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

15. Regarding the limitation appearing in claims 13, 25, and 26, it has been held that the recitation that an element is “capable of” performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138.

16. Claims 1, 4, 6, 7, 11, 12, 15, and 19-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Fajardo et al (US 6,444,133 B1)*.

17. Fajardo et al teach an optical fiber for the transmission of optical energy comprising a cladding region including a PBG structure, the optical energy having a wavelength within the photonic band gap of the PBG structure. The fiber also includes a core region surrounded by the PBG structure and that the core can be air. Fajardo et al also teach that the fiber can be made using a stack and draw method. (see abstract, and column 1, lines 26-65 and column 2, lines 30-42).

18. Fajardo et al discloses the claimed invention except for explicitly teaching that the loss is less than 50 dB/km. Libori et al disclose that a low loss and a near zero nonlinear refractive index is desirable (see column 1, lines 56-65) and can be achieved using a PGB structure in the cladding. It would have been obvious to one of ordinary skill in the art at the time of invention to have a loss less than 50 dB/km and a nonlinear refractive index less than  $5 \times 10^{-19} \text{ cm}^2/\text{W}$  since it has been held that where the general conditions of a claim are disclosed in the prior art,

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discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

19. Regarding the limitation appearing in claims 13, 21, 25, and 26, it has been held that the recitation that an element is "capable of" performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138.

### ***Conclusion***

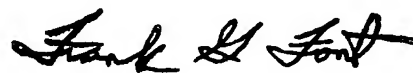
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derek L. Dupuis whose telephone number is (571) 272-3101. The examiner can normally be reached on Monday - Friday 8:30am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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